

TRANSMITTAL SLIP		DATE
TO: Neil		March 18/57
ROOM NO.	BUILDING	
REMARKS:		
<p>Neil please comment on Para 2 of your report How can we correct or get around this situation.</p> <p>ATS</p> <p>Please return</p>		
FROM:		
ROOM NO.	BUILDING	EXTENSION

FORM NO. 241  
1 FEB 55

REPLACES FORM 36-8  
WHICH MAY BE USED.

(47)

Al:

Neil's report on  
voice mod. for TA-1.

I believe we are supposed  
(per proj. init chd) to  
report on the feasibility  
of the mod. before continuing  
the ch.

MR.

The Files

28 February 1957

General: TA-1 Transmitter  
Specific: Modulator (Project 2515)

INTRODUCTION:

The TA-1 Transmitter was designed to be [ ] used with any receiver, the TA-1 and receiver comprising a complete radio station. The receiver supplies power to the TA-1 and the final audio tube in the receiver is extracted and inserted into the TA-1. This tube becomes the transmitter. Built into the transmitter case is a transistorized oscillator that can serve as a bfo in receivers lacking such a stage. In its present form, the TA-1 can only be used [ ].

MISSION ASSIGNMENT:

External Projects Section requested that an attempt be made to design a modulator for the TA-1. EP placed no restrictions on the size of the modulator and did not specify that it should be either an integral part of the transmitter or a separate unit.

DISCUSSION:

The modulator for the unit may be made an integral part of the transmitter by eliminating the modulation transformer normally used, and by keeping the number of components to a minimum. The hand key and bfo circuitry would have to be removed to make room for these new products.

Figure 1 in the appendix shows the circuit developed. This circuit performed satisfactorily but has one serious fault. If the transmitter tube is removed or the filament opens, the transistor (953) might be damaged due to the increase in collector voltage.

The modulator may be made as a separate unit. The circuit shown in Figure 2 should modulate the transmitter 60 to 75 percent. Two power cables would be necessary. One cable would be used for [ ] and the other cable for phone operation. Modifications on TA-1 transmitters now in the field could be made without any difficulty. A separate modulator unit would not appreciably increase the weight or size of the completed unit.

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CONCLUSION:

The more satisfactory way to modulate the transmitter is to create a separate modulator unit. A separate unit creates no hazard to the final transistor; its installation is simple enough so that a field station could adapt it to existing TA-1 transmitters.

ATTACHMENT: Appendix

Lab/NCC/bao (28 Feb 57)

Distribution:

Original - Lab Files  
1 - Dev/s

25X1

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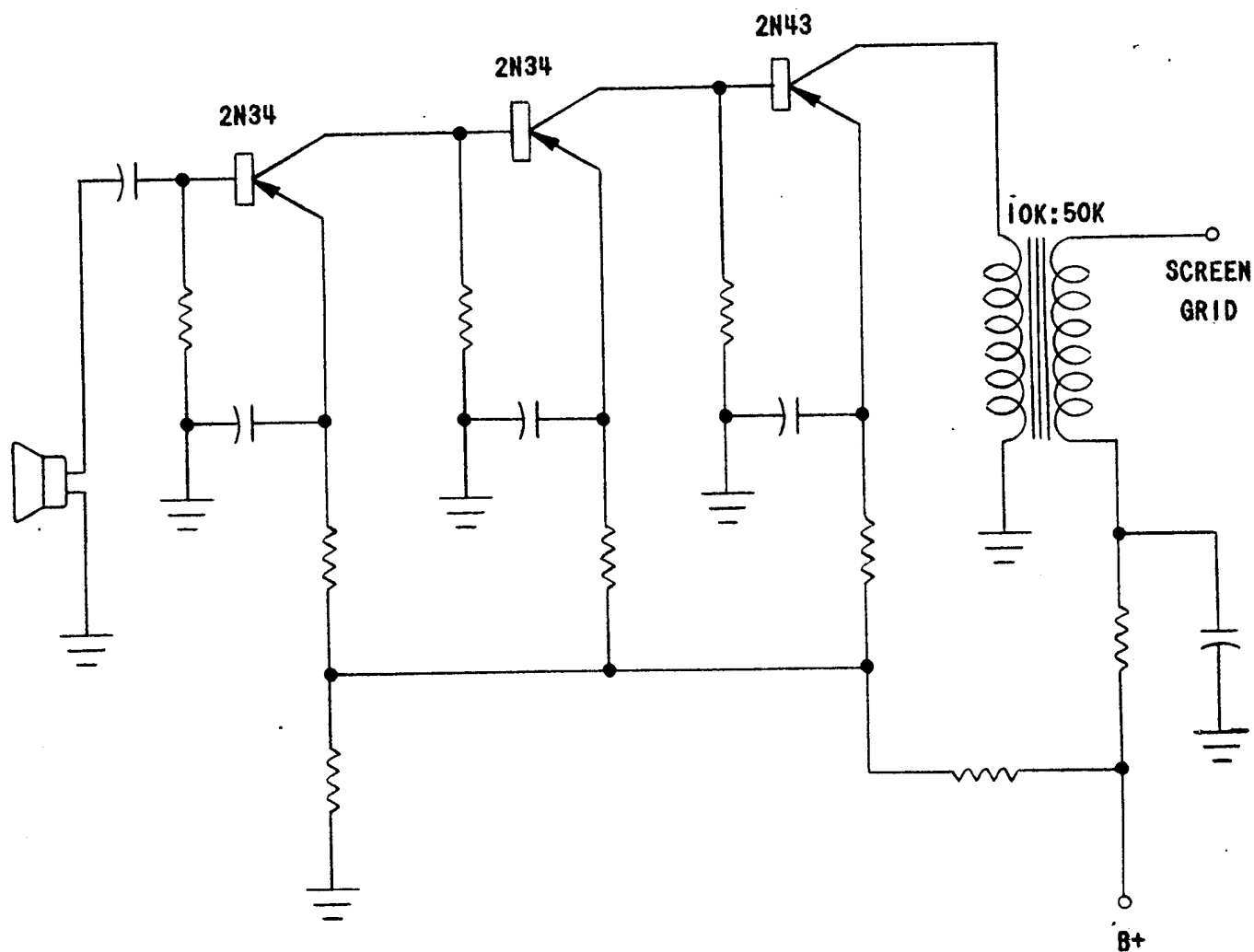


FIG. 2  
PROPOSED CIRCUIT FOR TA-I MODULATOR

## TA-1 MODULATOR

Resistors

R1	24 K	1/2 W	5%	IRC
R2	1.6 K	1/2 W	10%	IRC
R3	270 ohms	1/2 W	10%	IRC
R4	2.7 K	1/2 W	10%	IRC
R5	68 K	1/2 W	10%	IRC
R6	4.7 K	1/2 W	10%	IRC
R7	100 ohms	1/2 W	10%	IRC
R8	6.2 K	1/2 W	5%	IRC
R9	43 K	2 W	5%	IRC
R10	151 ohms	1/2 W	10%	IRC
R11	39 K	1 W	10%	IRC
R12	33 K	1/2 W	10%	IRC
R13	100 K	1/2 W	10%	IRC
R14	4.7 K	1 W	10%	IRC
R15	47 K	2 W	10%	IRC

(1) Mike  
Mini-Mike Telex, Inc.

S2 Push-to-Talk Switch  
Grayhill

J1 Continental Type 4-203  
4 Prong Connector

Capacitors

C1	8 uf	4 V DC	Type TAW	Tan	Mallory
C8	100 uf	10 Volts	PP 100 B10A1	Tan	G. E.
C3, C4	25 uf	8 volts	PP 25B8A1	Tan	G. E.
C7	.03 uf	400 V DC	Type P82		Aerovox
C6	.1 uf	200 V DCW	P 123ZNG		"
C5	.005 uf	300 V DC	DIM502		Centralab
C2	1 uf	10 V NF	Tan 57		Cornell Dubilier

Transistors

TR1, TR2	2N106	Raytheon
TR3	953	Texas Instruments
TR4	952	Texas Instruments

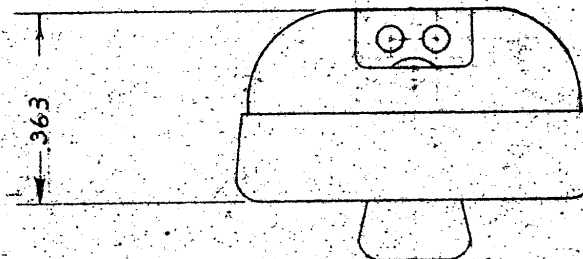
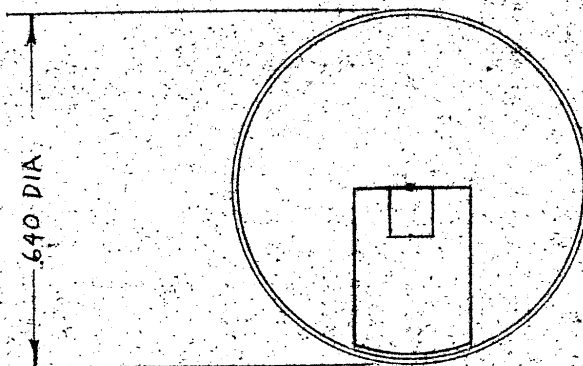
Diodes

Z1 (1)	Zener 1N4740	National Semiconductor Corp.
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Transformer

T1 (1)	Dot 17	UTC
S1 (1)	DPDT Toggle Switch	Stackpole

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			TOLERANCES UNLESS SPECIFIED		FRACT. DIM. $\pm$	DECIMAL DIM. $\pm$ .005	ANGULAR DIM. $\pm$	SCALE 4:1
			DRAWN BY: J. M. L.		APPROVED:			
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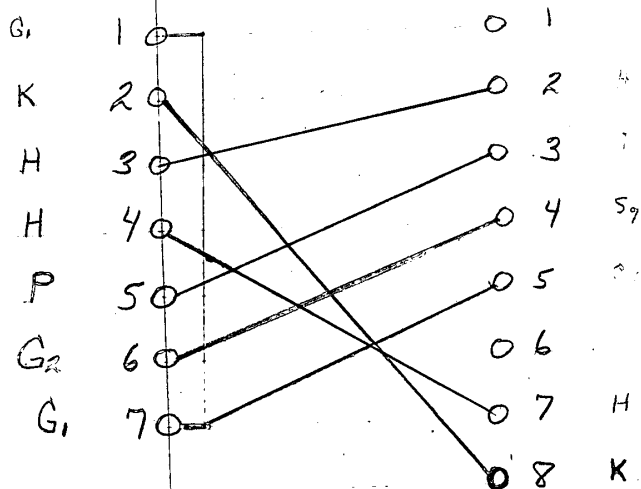
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## Adapter For Ceramic Tube

5N2146BSocket  
7 Pin Min

8 Pin Octal Plug



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54100  
1464  
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141